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EXAMINER	
CONOVER, DAMON M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/623,847	PAQUETTE ET AL.	
	Examiner	Art Unit	
	Damon Conover	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/21/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the sentence starting with "in the initial step of the method of this invention embodiment of the method of this invention" is unclear. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities: it is not clear to what method 10 refers (paragraph 21 of the specification). Appropriate correction is required.0

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.
>
> Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.
>
> ... a signal does not fall within one of the four statutory classes of Sec. 101.
>
> ... signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

3. Claims 8-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 8-18 are drawn to functional

descriptive material recorded on a computer-readable medium and a computer-usable medium. Normally, the claims would be statutory. However, the specification, at paragraph 41, defines the claimed computer-readable medium and computer-usable medium as encompassing statutory media such as a floppy disk, flexible disk, hard disk, magnetic tape, CDROM, punched card, paper tape, RAM, and PROM, as well as ***non-statutory*** subject matter such as a carrier wave.

A carrier wave embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, a carrier wave is a form of energy, in the absence of any physical structure or tangible material.

Because the full scope of the claim as properly read in light of the disclosure encompasses non-statutory subject matter, the claim as a whole is non-statutory. The examiner suggests amending the claim to *include* the disclosed tangible computer readable media, while at the same time *excluding* the intangible media such as carrier waves. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2 and 4-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. (U.S. Patent 4,736,441) in view of Matsumoto et al. (U.S. Patent 5,774,584).

With respect to claim 1, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark detection areas are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line segments (column 5, lines 14-29). Edge mark detectors determine whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area

is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations, an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46).

Hirose et al. describe that edge mark detection and masking makes possible the detection of airmail mark, stamp, and address information in cases where those objects overlap the edge mark by eliminating the edge mark (column 8, lines 24-34). Hirose et al. do not describe identifying a plurality of intersecting lines from the histogram data.

Matsumoto et al. disclose an image processing method and apparatus which can identify ruled lines which construct a table from image data of a table area (column 1, lines 11-14). Histograms of pixels from the table area in the horizontal and vertical directions are obtained (column 3, lines 1-18). Using the peak position coordinates of the histograms, the plurality of intersecting lines are identified (column 3, line 62 – column 4, lines 25). The plurality of intersecting lines are used to identify a table and the individual cells of the table (features of the image) (figure 5 and column 4, lines 26-43).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the step of generating horizontal and vertical histograms to detect the intersection of lines, as taught by Matsumoto et al., in the postal material reading apparatus of Hirose et al., in order to identify points where objects overlap edge marks.

With respect to claim 2, as discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and

determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark detection areas are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line segments (column 5, lines 14-29). Edge mark detectors determine whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations (characteristic properties), an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46). Line segments which are not determined to be constant or to match characteristic reference locations (characteristic properties) are determined to not be an edge mark (collinear line segments).

With respect to claim 4, as discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and

determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark detection areas (preselected locations) are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line segments (column 5, lines 14-29). Edge mark detectors determine whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations (characteristic properties), an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46). Line segments which are not determined to be constant or to match characteristic reference locations (characteristic properties) are determined to not be an edge mark (collinear line segments).

Hirose et al. do not describe identifying a plurality of intersecting lines from the histogram data.

As discussed above, Matsumoto et al. disclose an image processing method and apparatus which can identify ruled lines which construct a table from image data of a table area (column 1, lines 11-14). Histograms of pixels from the table area in the horizontal and vertical directions are obtained (column 3, lines 1-18). Using the peak position coordinates of the histograms, the plurality of intersecting lines are identified (column 3, line 62 – column 4, lines 25). The plurality of intersecting lines are used to identify a table and the individual cells of the table (features of the image) (figure 5 and column 4, lines 26-43). In the combination of Hirose et al. and Matsumoto et al., the points where objects overlap edge marks (features of the image) will be identified in the edge mark detection areas (preselected locations).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the step of generating horizontal and vertical histograms to detect the intersection of lines, as taught by Matsumoto et al., in the postal material reading apparatus of Hirose et al., in order to identify points where objects overlap edge marks.

With respect to claim 5, as discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark

detection areas (preselected locations) are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line segments (column 5, lines 14-29). Edge mark detectors determine whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations (characteristic properties), an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46). Line segments which are not determined to be constant or to match characteristic reference locations (characteristic properties) are determined to not be an edge mark (collinear line segments).

Hirose et al. do not describe identifying a plurality of intersecting lines from the histogram data.

As discussed above, Matsumoto et al. disclose an image processing method and apparatus which can identify ruled lines which construct a table from image data of a table area (column 1, lines 11-14). Histograms of pixels from the table area in the horizontal and vertical directions are obtained (column 3, lines 1-18). Using the peak position coordinates of the histograms, the plurality of intersecting lines are identified (column 3, line 62 – column 4, lines 25). The plurality of intersecting lines are used to

identify a table and the individual cells of the table (features of the image) (figure 5 and column 4, lines 26-43). In the combination of Hirose et al. and Matsumoto et al., there will be edge mark detection areas on all four sides of the envelope. The above steps will be repeated for each edge mark detection area; therefore identifying subsequent collinear line segments, subsequent intersecting lines, and subsequent features.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the step of generating horizontal and vertical histograms to detect the intersection of lines, as taught by Matsumoto et al., in the postal material reading apparatus of Hirose et al., in order to identify points where objects overlap edge marks.

With respect to claim 6, as discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark detection areas (preselected locations) are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line segments (column 5, lines 14-29). Edge mark detectors determine

whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations (characteristic properties), an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46). Line segments which are not determined to be constant or to match characteristic reference locations (characteristic properties) are determined to not be an edge mark (collinear line segments).

Hirose et al. do not describe identifying a plurality of intersecting lines from the histogram data.

As discussed above, Matsumoto et al. disclose an image processing method and apparatus which can identify ruled lines which construct a table from image data of a table area (column 1, lines 11-14). Histograms of pixels from the table area in the horizontal and vertical directions are obtained (column 3, lines 1-18). Using the peak position coordinates of the histograms, the plurality of intersecting lines are identified (column 3, line 62 – column 4, lines 25). The plurality of intersecting lines are used to identify a table and the individual cells of the table (features of the image) (figure 5 and column 4, lines 26-43). In the combination of Hirose et al. and Matsumoto et al., there will be edge mark detection areas on all four sides of the envelope. The above steps will be repeated for each edge mark detection area; therefore identifying subsequent collinear line segments, subsequent intersecting lines, and subsequent features.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the step of generating horizontal and vertical histograms to detect the intersection of lines, as taught by Matsumoto et al., in the postal material reading apparatus of Hirose et al., in order to identify points where objects overlap edge marks.

In the combination of Hirose et al. and Matsumoto et al., each edge mark detection area is processed separately. There is no specific teaching that the same features detected in overlapping areas are merged.

However, Official Notice (see MPEP 2144.03) is taken that both the concept and the advantages of merging the same features that have been extracted from overlapping regions are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to merge two features extracted from overlapping regions, if it is determined that they are the same feature, in the postal material reading apparatus of Hirose et al. and Matsumoto et al., in order to reduce the set of features to only include unique features.

With respect to claim 7, as discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material (mail piece) and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57).

With respect to claims 8-13, the "system for identifying features on an item" corresponds to the "method for detecting features" of claims 1-2 and 4-7. The arguments are the same as is addressed above.

With respect to claims 14-18, the "computer program product" corresponds to the "method for detecting features" of claims 1-2 and 4-6. The arguments are the same as is addressed above.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. and Matsumoto et al. as applied to claims 1-2 and 4-18 above, and further in view of the article, "A Fast Line Finder for Vision-Guided Robot Navigation", by P. Kahn, L. Kitchen, and E.M. Riseman.

As discussed above, Hirose et al. disclose a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks that are critical to the determination (column 1, lines 52-57). The surfaces of each envelope is scanned by imaging devices 14 and 15 in order to obtain image data relating to stamp 2, address 4, airmail mark 5, airmail edge mark E, return address 8, and seal 9 (figures 1-4 and column 3, lines 16-27). It is inherent that pixel data is obtained for the pixels in the scanned image. Edge mark detection areas (preselected locations) are defined and a histogram of each edge mark detection area is calculated (column 4, line 58 – column 5, line 2). Peak values for the histograms and their positions (line segment data) are stored. The peak values indicate the existence of line segments, and the positions of the peak values indicate the positions of the line

segments (column 5, lines 14-29). Edge mark detectors determine whether each repetition rate and/or position of the peak value of the histogram for each edge marking of each edge mark detector area is within the limits of a characteristic location pattern of a standard edge marking. If the period of repetition is determined to be constant and match characteristic reference locations (characteristic properties), an edge mark is determined to be present. This is analogous to identifying a plurality of edge marks (collinear line segments) from the histogram data (line segment data) (figures 8A-D, column 5, lines 30-46). Line segments which are not determined to be constant or to match characteristic reference locations (characteristic properties) are determined to not be an edge mark (collinear line segments). As discussed above, Matsumoto et al. disclose an image processing method and apparatus which can identify ruled lines which construct a table from image data of a table area (column 1, lines 11-14). Histograms of pixels from the table area in the horizontal and vertical directions are obtained (column 3, lines 1-18). Using the peak position coordinates of the histograms, the plurality of intersecting lines are identified (column 3, line 62 – column 4, lines 25). The plurality of intersecting lines are used to identify a table and the individual cells of the table (features of the image) (figure 5 and column 4, lines 26-43).

Neither Hirose et al., nor Matsumoto et al. describe a histogram displays a number of line segments in a predetermined angular range.

In the article, "A Fast Line Finder for Vision-Guided Robot Navigation", Kahn et al. disclose a line extraction algorithm that coarsely quantized pixels into one of a fixed

number of buckets based upon gradient direction (angular ranges) (figure 1b and page 1098, section I and page 1099, section B).

It would have been obvious to one of ordinary skill in the art at the time of the invention to group pixels based on gradient direction (angular ranges), as taught by Kahn et al., in the histograms of the postal material reading apparatus of Hirose et al. and Matsumoto et al., in order to select line segments that are parallel to each other.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Osada (U.S. Patent 5,629,989) discloses a process that includes a feature by which a region is defined and the amount of influence of a remarkable one of the peaks in a histogram upon frequency distribution on the histogram are determined and then histogram frequency values of the other peaks in the defined region are corrected according to the determined amount of influence to partially rewrite the histogram (abstract).

Herbert (U.S. Patent Publication 2001/00563408) discloses a method of detection of an imprint of a postal indicium at a location on a mail piece (abstract).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Damon Conover whose telephone number is (571) 272-5448. The examiner can normally be reached Monday – Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7453. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

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